

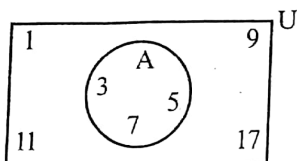
**CHAP.**

**Arithmetic Progression**

1 A) Solve the following. (Any Four)

4

- Simplify the given surd  $\sqrt{112}$ .
- Find the geometric mean of 8 and 18.
- Find the value of  $|8| + |-3|$ .
- Observe the adjacent Venn diagram and write the complement of A.



v) Rationalize the denominator  $\frac{6}{9\sqrt{3}}$ .

vi) What is the order of the surd  $\sqrt[3]{\sqrt{5}}$ ?

B) Solve the following. (Any Two)

4

- In a hostel there are 125 students, out of which 80 drink tea, 60 drink coffee and 20 drink both tea and coffee. Find the number of students who do not drink tea or coffee.
- Compare following pair of ratio.

$$\frac{3\sqrt{5}}{5\sqrt{7}}, \frac{\sqrt{63}}{\sqrt{125}}$$

iii) Simplify:  $7\sqrt{48} - \sqrt{27} - \sqrt{3}$ .

2. A) Select the correct alternative of each of the following questions.

4

i) What is the sum of first  $n$  natural numbers?

a)  $\frac{n(n-1)}{2}$       b)  $\frac{n}{2}(n-2)$       c)  $\frac{n(n+1)}{2}$       d)  $\frac{n(n+2)}{2}$

ii) For an given A.P.  $t_7 = 4$ ,  $d = -4$  then  $a =$  \_\_\_\_.

a) 6      b) 7      c) 20      d) 28

iii) In an A.P 1st term is 1 and the last term is 20. The sum of all terms is 399 then  $n =$  \_\_\_\_.

a) 42      b) 38      c) 21      d) 19

iv) If for an A.P  $d = 5$  then  $t_{18} - t_{13} =$  \_\_\_\_.

a) 5      b) 20      c) 25      d) 30

B) Solve the following. (Any Two)

4

- Write first five terms of an A.P. if  $a = 6$  and  $d = -3$
- Check whether given sequence is an A.P. or not  
2, -2, -6, -10
- Find the 19<sup>th</sup> term of the following A.P.  
7, 13, 19, 25

3. A) Complete the following activity (Any 2).

- i) Fill up the boxes and find out the number of terms in the A.P.

1, 3, 5, ..... 149

Here,  $a = 1$ ,  $d = \boxed{2}$ ,  $t_n = 149$

$$t_n = a + (n - 1) d$$

$$\therefore 149 = \boxed{\phantom{00}}$$

$$\therefore 149 = 2n - \boxed{\phantom{00}}$$

$$\therefore n = \boxed{\phantom{00}}$$

- ii) The first term of an A.P is 5 and the common difference is 4 complete the following activity to find the sum of the first 12 terms of the A.P.

$a = 5$ ,  $d = 4$ ,  $S_{12} = ?$

$$S_n = \frac{n}{2} [\boxed{\phantom{00}}]$$

$$\therefore S_{12} = \frac{12}{2} [10 + \boxed{\phantom{00}}]$$

$$\therefore S_{12} = 6 \times \boxed{\phantom{00}}$$

$$\therefore S_{12} = \boxed{\phantom{00}}$$

- iii) Write the correct number in the given boxes.

- 3, - 8, - 13, - 18, \_\_\_\_\_

Here  $t_3 = \boxed{\phantom{00}}$ ,  $t_2 = \boxed{\phantom{00}}$ ,  $t_4 = \boxed{\phantom{00}}$ ,

$$t_1 = \boxed{\phantom{00}}$$

$$t_2 - t_1 = \boxed{\phantom{00}}, t_3 - t_2 = \boxed{\phantom{00}}$$

B) Solve the following. (Any Two)

- i) In an A.P 17th term is 7 more than its 10th term. Find the common difference.  
 ii) Find the fourth term from the end in an A.P - 11, - 8, - 5, ..... 49  
 iii) Check whether 301 is in the sequence.  
 5, 11, 17, 23, ..... ?

4. Solve the following. (Any Three)

- i) A man borrows ₹ 8000 and agrees to repay with a total interest of ₹ 1360 in 12 monthly installments. Each instalment being less than preceding one by ₹ 40. Find the amount of the first and last installment.  
 ii) Find four consecutive terms in an A.P. whose sum is 12 and sum of 3rd and 4th term is 14.  
 iii) The 11th term and the 21st term of an A.P. are 16 and 29 respectively, then find the 41st term of that A.P.  
 iv) How many natural numbers from 10 to 250 are divisible by 4 ? Find the sum of all these numbers.

5. Solve the following. (Any One)

- i) If the sum of first  $p$  terms of an A.P is equal to the sum of first  $q$  terms then show that the sum of its first  $(p + q)$  terms is zero. ( $p \neq q$ ).  
 ii) The ages of the boys in a group are in A.P with common difference of 3 months. The age of youngest boy in the group is 12 years. The sum of ages of all the boys in the group is 375 years. Find the number of boys in the group.

6. Solve the following. (Any One)

- i) If  $(8x + 1)$ ,  $(6x - 1)$  and  $(3x + 5)$  are in A.P. Then find the terms.  
 ii) If the 9th term of an A.P. is zero then show that the 29th term is twice the 19th term.